

## Studies on Victorian bryophytes 3: The genus *Leptodon* D Mohr

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### Abstract

*Leptodon smithii* (Hedw.) F Weber and D Mohr is the only species of the moss genus *Leptodon* in Victoria. This species is described and illustrated, its distribution in Australia is delineated, and its conservation status is discussed. (*The Victorian Naturalist* 123 (3) 2006, 166-169)

### Introduction

*Leptodon* is a genus of mosses in the family Leptodontaceae. More than 30 species of *Leptodon* have been described, but only four are generally accepted as good species (Stark 2000). However, the genus has been poorly studied and needs a comprehensive world-wide revision.

*Leptodon smithii* (Hedw.) F Weber and D Mohr is the only member of the genus known to occur in Australia. It is an almost cosmopolitan species, being found in natural habitats on all continents except Antarctica. Its stronghold is southern and western Europe, especially the Mediterranean countries (Dixon 1954; Jahns 1983), but it is also recorded from northern and southern Africa, North America, South America and New Zealand (Beever *et al.* 1992, Stark 2000). In Australia it is known from Victoria, New South Wales, the Australian Capital Territory and southern Queensland. *Leptodon smithii* has several common names, including the simple but descriptive Curly Moss, the imaginative Prince-of-Wales Feather-moss, and the dreary Smith's Leptodon.

### Description

*Leptodon smithii* (Hedw.) F Weber & D Mohr

*Ind. Mus. Pl. Crypt.* 2 (1803)

**Known distribution in Australia:** Vic, NSW, ACT, Qld

**Habitat:** on well-shaded limestone or granite, or epiphytic on trees, shrubs or vines, in dry to wet sclerophyll forest or rainforest.

**Plants** with a creeping primary stem from which flattened, bipinnate, pale to dark green fronds arise; fronds strongly coiled

when dry (Fig. 1); dioicous, sporophytes maturing over two years so that two generations of sporophytes may be present on one plant. **Rhizoids** arising from the primary stem and branches, reddish brown. **Branches** with many small  $\pm$  linear paraphyllia and pseudoparaphyllia, the pseudoparaphyllia often shortly branched. **Leaves** ovate to tongue-shaped, rather variable in size but generally 1.0–1.3  $\times$  0.6–0.9 mm on the stems, slightly smaller on branches, flat to slightly concave, rugose to plicate, weakly spreading from the stem when moist but appressed and flattened when dry, slightly decurrent. **Costa** strong, gradually weakening and ending well above mid-leaf, often forked. **Cells** in the leaves thick-walled, mostly isodiametric to diamond-shaped, typically 8–15  $\times$  7–10  $\mu$ m; a patch of longer, more reotangular cells usually present in the leaf base. **Capsules** ovate-cylindrical when mature; 2–2.5 mm long in Australian material, very shortly exserted, smooth to slightly pocked and ridged, yellow-brown when young, becoming reddish-brown when mature; outer peristome of 16 narrow, pale teeth, strongly curved into the capsule mouth when dry but  $\pm$  erect when moist; inner peristome poorly developed or absent; operculum with a long, curved beak, acutely pointed. **Spores** yellow-brown, very finely papillose, 15–25  $\mu$ m in diameter. **Calyptra** long, conical and pointed, somewhat hairy to naked. **Vaginula** hairy; hairs (paraphyses) pale yellow, often extending beyond the perichaetial leaves, (1–) 2 cells wide, the cells mostly long-reotangular, thick-walled. **Perichaetial leaves** much longer and narrower than normal leaves, straight

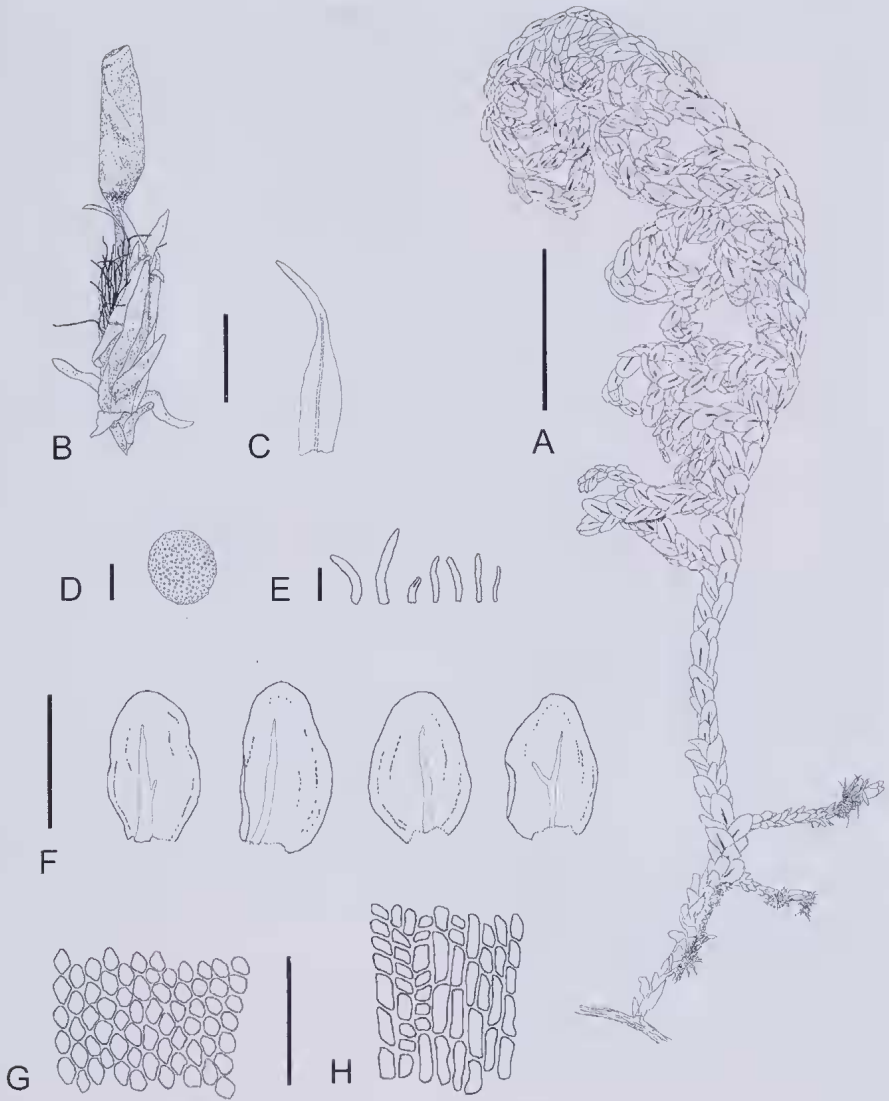


Fig. 1. *Leptodon smithii*. A Dry secondary stem. B Sporophyte and perichaetial leaves. C Perichaetial leaf. D Spore. E Paraphyllia and pseudoparaphyllia. F Leaves from stem. G Cells in mid-leaf. H Cells in leaf base. Scale bars: A = 5 mm, B, C, F = 1 mm, D = 10  $\mu$ m, E, G, H = 100  $\mu$ m. All drawn from MELU 7375.

to rather squarrose, with distinct shoulders, apex blunt; costa narrow, reaching well beyond 1/2 of the leaf length; cells thick-walled, mostly long and very narrow, to about  $50 \times 7 \mu$ m, sinuous, often porose, shorter at the margins and at the apex,  $\pm$  rectangular in the base. Male reproductive organs not seen.

**Notes:** The range of variability in *Leptodon smithii* is yet to be satisfactorily delineated, and awaits a comprehensive re-evaluation of material from around the world. Descriptions of plants from Europe and North America usually state that the costa is weak and single or short and double, reaching to 1/2 the leaf length, and it is never described as forked. Spore size for

northern hemisphere material is given as about 16  $\mu\text{m}$  (Smith 1978) and 12–15  $\mu\text{m}$  (Stark 2000). However, a sterile specimen from France (MEL 1031884) agrees well with Australian material although the forking of the costa is barely apparent.

**Representative specimens seen:** (1) VIC: Mt Alexander, near Castlemaine. On granite boulder. Stone s.n. 1969. MELU 7375. (2) VIC: East Gippsland, Jones Creek Reference Area. On rock in *Nothofagus* forest. Chesterfield s.n. 1987. MEL 1055056. (3) NSW: Mt Exmouth, Warrumbungle National Park. Southern side of mountain just below summit. Eurell (no. 79/7) 1979. MO (dupl. CANB 7910181). (4) NSW: Bungonia Creek Gorge. *Acmena smithii* and *Casuarina*-dominated creek bank through limestone gorge. On trunk of *Ficus*, in shade. Streimann (no. 6181) 1978. MO (dupl. CBG 7902598). (5) ACT: Orroral Valley Lookout, Namadgi National Park. Dry sclerophyll forest on moderate slope with large granite boulders. On shaded vertical boulder. Forming large colonies. Streimann (no. 53681) 1994. MO (dupl. CBG 9403868).

#### Similar taxa

Several other mosses might be confused with *Leptodon smithii* in the field, especially if the plant is moist and capsules are absent. *Cyrtodon muelleri* has distinctly papillose leaf margins, distinct alar cells, and does not grow on rock, and its capsules are immersed. *Fallaciella gracilis* is not pinnately branched and has concave and slightly pointed leaves, and the costa is usually very weak and double. *Thamnobryum pandum* has coarsely toothed leaf margins, and the costa is strong and reaches almost to the leaf apex. *Camptochaete* species have a very weak costa or none at all, and the leaves are distinctly concave. Other similar mosses, such as *Forsstroemia* and *Cryphaea*, have pointed leaves. All of the above can be distinguished from *L. smithii* by the lack of coiling of the fronds when dry (although the branches of *F. gracilis* may be slightly curved), and capsules borne on medium to long setae (except in *Cyrtodon muelleri*).

#### Discussion

*Leptodon smithii* is known in Victoria from only two localities: in dry sclerophyll forest on Mount Alexander (near Castlemaine) and warm temperate rainforest in East Gippsland (Fig. 2). In New South Wales and the ACT it has been found in lowland to upland sclerophyll forest and rainforest in several localities. In Queensland it has been found only in rainforest in the Bunya Mountains, south-west of Kingaroy. It is not known from Tasmania (Dalton *et al.* 1991, Streimann and Klazenga 2002).

In Victoria *Leptodon smithii* is exceedingly rare and endangered. It is a plant of deep shade, so habitat modification such as the destruction of the canopy or disturbance of boulders is a threat to the survival of populations. Mount Alexander and the Jones Creek Reference Area are prone to wildfire, and in fact Jones Creek was

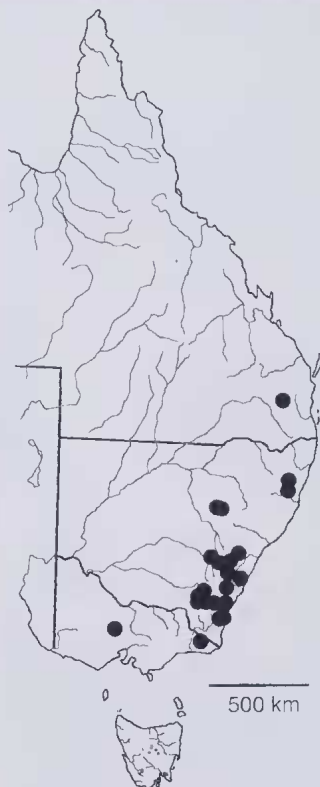


Fig. 2 Known distribution of *Leptodon smithii* in Australia.

severely burnt in 1983 (D Cameron, Department of Sustainability and Environment, pers. comm. Sept. 2005). At the time of writing, *Leptodon smithii* had been recommended for listing as a threatened taxon under the Victorian *Flora and Fauna Guarantee Act 1988* (M. O'Brien, Department of Sustainability & Environment, pers. comm. April 2006). From a national perspective the species appears to be secure because it has been collected in recent times from many localities in New South Wales.

The Mount Alexander material (MELU 7375, dupl. MEL) was collected from a granite boulder by Ilma Stone in 1969, but there is no record of the specific locality or habitat. Several searches by the author have been made for the species at Mount Alexander in recent years, without success. If it still occurs there it must be extremely rare. The East Gippsland specimen (MEL 1055056) was collected by Evan Chesterfield in 1987 in the Jones Creek Reference Area, now part of Cooracamba National Park. This locality has not been searched for the species since then. The early collections of *L. smithii* in Australia (dating from 1884) and its far-flung distribution in natural habitats demonstrate that it is not introduced here. Outside Victoria the species is known from numerous sites along and adjacent to the Great Divide, and appears to be secure nationally. But because it is known only from a single site in Queensland, its conservation status in that state should be carefully assessed. Scott (1997) did not consider the species to be rare or threatened in Australia, which seems reasonable on the available evidence. World-wide it seems to be a common species and is unlikely to be endangered.

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## Glossary

- alar cells** group of enlarged or otherwise distinctly different cells at the corners of the leaf base
- calyptra** thin protective covering over the developing capsule; falls off when capsule is mature
- costa** thickening of the leaf forming a midrib or nerve
- paraphyllia, pseudoparaphyllia** minute leaf-like appendages arising from the stems or branches
- perichaetial leaves** modified leaves surrounding the female reproductive organs
- vaginula** cup-shaped structure at the base of the seta, formed from the lower half of the archegonium (female reproductive organ)